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Model UU-2X4

Rev B

Dual-Channel USB-over-UTP Extender
With Two 4-port Remote Hubs for total of 8 Ports

Extends 2 independent USB ports on a Single UTP
Cable to 230 meters (750 feet)
Remote unit provides 8 USB Ports

UMA1094 Rev C

Contents

1. INTRODUCTION **3**

1.1 GENERAL 3
1.2 CONTENTS 3
1.3 FEATURES 3

2. INSTALLATION **4**

2.1 SETUP 4
2.2 USB CABLES 5
2.3 POWER CONSIDERATIONS 5

3. TROUBLESHOOTING **6**

3.1 COMMON SOURCES OF PROBLEMS 6
3.2 CONTACTING HALL RESEARCH 6
3.3 SHIPPING AND PACKAGING 6

4. SPECIFICATIONS **7**

ADDENDUM: UU-2X4-P1 & UU-2X4-P2 VARIATIONS **8**

Hall Research Inc.

Home of the Mini-Cat®

FEDERAL COMMUNICATIONS COMMISSION

RADIO FREQUENCY INTERFERENCE STATEMENT

This equipment generates, uses, and can radiate radio frequency energy. If not installed and used properly—that is, in strict accordance with the manufacturer's instructions—it may cause interference to radio communication. It has been designed to comply with the limits for a Class A computing device in accordance with the specifications in Subpart B of Part 15 of FCC rules, which are designed to provide reasonable protection against such interference when the equipment is operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference, in which case the user will be required to take whatever measures may be necessary to correct the interference at his/her own expense.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This digital apparatus does not exceed the Class A limits for radio noise emission from digital apparatus set out in the Radio Interference Regulation of the Canadian Department of Communications.

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1. Introduction

1.1 General

The UU-2X4, uses one Category 5e or 6 UTP (or STP) cable to extend two independent USB ports (from one or two different PCs). On the remote side, each extended USB port terminates into a 4-port USB hub. This allows up to 4 USB devices to be connected to each extended USB port for a total of 8 ports.

Depending on the UTP cable the unit can extend the USB port to 230 meters (750 ft). Maximum distance using Cat5 (UTP or STP) cable is 150 meters (500 ft), and using Cat6 (UTP or STP) cable is 230 meters (750 ft).

The UU-2X4 provides all the flexibility of an extended range USB in a ready-to-use package. The UU-2X4 is compatible with USB 2.0 specifications and supports both low-speed (1.5 Mbps) and full-speed (12 Mbps) USB data transfer rates.

It delivers all of the benefits of USB, including remote device powering, plug and play operation, and cross-platform flexibility.

1.2 Contents

The UU-2X4 package is composed of two separate units: the sender and the receiver, 2ea 6 ft AB USB cables for connection to the PC, and two power supplies. Also provided are Rack mount brackets for the sender unit and this user's manual.

1.3 Features

- Extends 2 independent USB ports from one or two PCs up to 750 ft
- Uses a single standard Category 5/5e/6 UTP cable
- Supports isochronous, control, interrupt and bulk data transfers
- Supports low-speed (1.5 Mbps) and full-speed (12 Mbps) USB data transfer rates
- Fully Transparent – no drivers, setup or configuration necessary
- Supports up to 8 USB devices at the remote (two groups of 4)
- Extremely Reliable
- Compatible with virtually all USB peripherals and devices
- LED status indicators on the Transmitter and Receiver units
- Made in USA

2. Installation

2.1 Setup

1. Power down the PC.
2. Place the Sender (also referred to as Local or Transmitter) unit near the host computer.
3. Plug the supplied power adapter into an AC outlet and connect it to the Sender.
4. Plug one or both Type B connectors on the extender using the included cable into the PC.
5. At the remote location plug the supplied power adapter into the Receiver.
6. Using Cat6 or Cat5e cable, connect the Sender to the Receiver.
7. Power up the PC.
8. The PC will recognize the extender as Hubs and automatically installs them.
9. Plug the USB devices to the receiver unit. As you do this, the PC will recognize each device and if it has default drivers for them they will automatically get installed; or if you have a custom driver supplied with the device, you may have to install that driver just as you would if you had plugged the device directly to the PC.

Figure 1. Sender (bottom) & Receiver (top) connectors and indicators

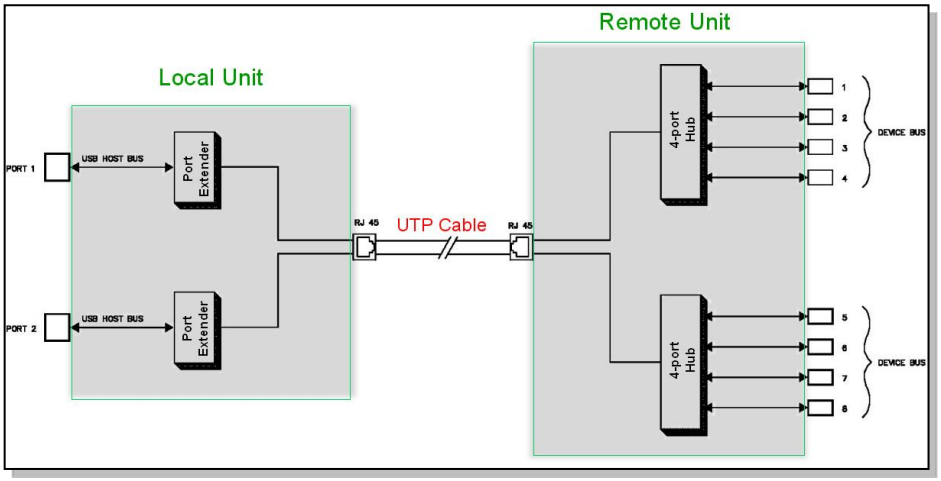


Figure 2. UU-2X4 Block Diagram

2.2 USB Cables

USB cables can have two different connectors. Type A connector is used to connect from a USB device to the Type A port on a computer or hub. Type B connector is used to attach the USB cable to a USB device. The Model UU-2X4 Sender has 2 Type B connectors on it for connection to the PC(s).

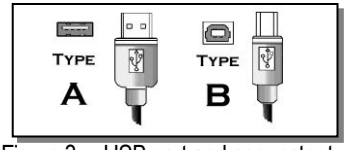


Figure 3 USB port and connector types

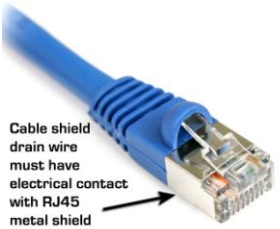
2.3 Power Considerations

The Remote unit is set to supply 100mA max at each of its 8 outputs. This should be enough for most USB devices. If your USB device requires more than 100ma of port power for operation it would normally come with its own power supply.

3. Troubleshooting

3.1 Common Sources of Problems

- Please make sure UTP cable is terminated properly (TIA/EIA-568 A or B).
- Do not plug this unit to LAN devices (this can damage the unit and void warranty)
- For noisy environments (or cases where the twisted pair cable is bundled with mass of other data, telecom, and/or power cables), shielded cable (STP) is recommended.
- If STP is used, then cable's shield drain wire must have electrical contact on the RJ45 shield at BOTH ENDS. If there are intermediate wall-plates that the cable passes through the shield drain must be carried through and not left open or floating.



- Make sure you are using the Sender/Receiver pairs that came together in the box, since newer versions of the product may not be backward compatible with earlier ones. The current version is Rev B. The white box indicates Rev B, and all Rev B serial numbers (on the bottom of the product) end with letter B.

3.2 Contacting Hall Research

If you determine that your unit is malfunctioning, do not attempt to repair the unit. The unit contains no user serviceable equipment. Opening the unit will void the warranty. Contact the Hall Research Technical Support department at 714-641-6607 to obtain a RMA (Return Authorization) number.
Before you do, make a record of the history of the problem. We will be able to provide more efficient and accurate assistance if you have a complete description.

3.3 Shipping and Packaging

If you need to transport or ship your unit, pack it carefully (original container recommended) and contact Hall Research for a Return Authorization (RMA) number.

4. Specifications

Dimensions

Sender Unit	
Width X Height X Depth	14" X 1-3/4" X 4-1/8" Single Rack Unit (1RU) construction with included rack mounting brackets
Receiver Unit	
Width X Height X Depth	10" X 1-3/8" X 3-9/16" (not including 2 mounting flanges 3/8" each added to the 10")

UTP Cable

Max Distance	230 meters (750 feet) using Cat6 (UTP or STP) 150 meters (500 feet) using Cat5 (UTP or STP)
Recommended Cable	Cat6 UTP (STP only recommended for eclectically noisy environments, or buildings with known grounding issues)

USB Support

Speed:	Full speed devices (12 Mb/s) Low speed devices (1.5 Mb/s)
Max # of Hubs	On any single chain you can have four USB hubs and one Extender in any order (including root hub)
Default Power Available	The Remote unit makes available +5v for bus powered USB devices with a maximum of 100 mA at each port

Addendum: UU-2X4-P1 & UU-2X4-P2 Variations

✦✦✦✦ *Support for full-speed direct extension of USB devices (fully transparent, hot-pluggable and hub-free)*

In some applications you may need to extend USB totally transparently to a remote site in such a way that the PC does not see the extension (or a hub) and only sees whatever device you plug or unplug at the remote site. Not all USB devices, in spite of the U in the name are Universal, and need direct connection to a PC to work properly.

The UU-2X4 is available in two variations to achieve the above. The –P1 removes the hub in the 2nd group and only provides one USB for Group 2 (Group A still has all 4 outputs), and –P2 removes both hubs so you only get one output on Group 1 and 1 on Group 2.

The direct extension only support full-speed devices (memory sticks, printers, cameras, etc) however they do not support low speed Human Interface Device (HID class) peripherals such as mouse or keyboard.

Direct Extension ports fully support hot plug detection so you can unplug and re-plug the remote device and the PC should be able to detect it properly (however, as you know, for best results, you must first un-mount ("safely remove hardware" the device) from your PC prior to unplugging it – this is recommended practice.

The Sender unit (UU-2X4-S) is the same as standard and for –P1 or –P2 only the remote unit is different.

Figure 4. UU-2X4-P1 Receiver

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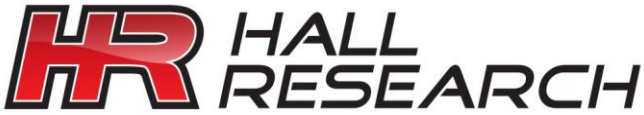

Product Designed and Made in the USA

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